12-26-06

AF

OIPE
DEC 21 2006
PATENT & TRADEMARK OFFICE

TRANSMITTAL LETTER (General - Patent Pending)	Docket No. FRK-102

In Re Application Of:
Mosing, et al.

Application No.	Filing Date	Examiner	Customer No.	Group Art Unit	Confirmation No.
10 / 690,920	22 October 2003	Patel, Vishal A.	021897	3673	6867

Title:
Tubular Connection with Slotted Threads

COMMISSIONER FOR PATENTS:

Transmitted herewith is:

Return Postcard;
Certificate of Express Mailing (EV 516730023 US); and
Corrected Appeal Brief to Board of Patent Appeals and Interferences

in the above identified application.

- ☒ No additional fee is required.
- ☐ A check in the amount of is attached.
- ☒ The Director is hereby authorized to charge and credit Deposit Account No. **13-2166** as described below.
  - ☐ Charge the amount of
  - ☒ Credit any overpayment.
  - ☒ Charge any additional fee required.
- ☐ Payment by credit card. Form PTO-2038 is attached.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

Taras P Bemko
Signature

Dated: Dec 21, 2006

Taras P. Bemko
Reg. No. 52,609
The Matthews Firm (Customer No. 021897)
2000 Bering Drive, Suite 700
Houston, Texas 77057
US
713 - 355 - 4200 Telephone
713 - 355 - 9689 Facsimile

cc:

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to the "Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450" [37 CFR 1.8(a)] on

_____.
(Date)

Signature of Person Mailing Correspondence

Typed or Printed Name of Person Mailing Correspondence

CERTIFICATE OF MAILING BY "EXPRESS MAIL" (37 CFR 1.10) Applicant(s): Mosing, et al.			Docket No. FRK-102	
Application No. 10/690,920	Filing Date 22 October 2003	Examiner Patel, Vishal A.	Customer No. 021897	Group Art Unit 3673

Invention:

Tubular Connection with Slotted Threads

I hereby certify that the following correspondence:

Transmittal Letter (General - Patent Pending), and all documents referenced therein

(Identify type of correspondence)

is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on

21 December 2006
(Date)

Matt Robinson
(Typed or Printed Name of Person Mailing Correspondence)

(Signature of Person Mailing Correspondence)

EV 516730023 US
("Express Mail" Mailing Label Number)

Note: Each paper must have its own certificate of mailing.

PRACTITIONER'S DOCKET NO.:FRANK'S CASING-102

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF:		§	
		§	
MOSING ET AL.		§	GROUP ART UNIT: 3673
		§	
SERIAL NO.:	10/690,920	§	EXAMINER:
		§	
FILED:	OCTOBER 22, 2003	§	VISHAL A. PATEL
		§	
TITLE: TUBULAR CONNECTION WITH SLOTTED THREADS		§	

COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, VA 22313-1450
ATTN: Group 3673

CORRECTED APPEAL BRIEF TO BOARD OF PATENT APPEALS AND INTERFERENCES UNDER 37 CFR 41.37

Sir:

Appellants hereby submit this Corrected Appeal Brief, responsive to the Notification of Non-Compliant Appeal Brief dated November 21, 2006. This being in furtherance of the Notice of Appeal under 37 C.F.R. 1.191, filed June 19, 2006, to the Board of Patent Appeals and Interferences, to appeal the decision of the Examiner of the Final Rejection of Claims 1-7, 10, 12-15, 17-21, 23, 26, 28, 29, 32-39, 51, 54, 56-58, 60, 61, 63-66, 69, 72, and 73, for the above designated application, Appellants hereby submit the information and arguments as required and in the order as specified under 37 C.F.R. 41.37(c).

1. Real Party in Interest

The real party in interest is Frank's Casing Crew & Rental Tools, Inc. a corporation having its office at 700 E. Verot School Road, Lafayette, Louisiana, by mesne assignments from Donald E. Mosing, a named inventor, David L. Sipos, a named inventor, and Jeremy R. Angelle, the other named inventor.

2. Related Appeals and Interferences

None.

3. Status of Claims

Appellants respectively submit this concise statement regarding the claim set, which Appellants believe are the claims under appeal. Each claim listed hereunder, which is designated as rejected, is being appealed in the instant appeal.

Claims 1-7, 10, 12-15, 17-21, 23, 26, 28-29, 32-39, 51, 54, 56-58, 60-61,63-66, 69, and 72-73 are rejected.

Claims 8-9, 11, 16, 22, 24-25, 27, 30-31, 40-50, 52-53, 55, 59, 62, 67-68, and 70-71 are canceled.

4. Status of the Amendments

The Appellants submit that one (1) amendment has been filed subsequent to a Final Office Action, which was mailed April 6, 2005. Appellants filed an Amendment in response to this Final Office Action (mailed April 6, 2005) on July 6, 2005. This Amendment was not entered in an Advisory Action mailed July 22, 2005. Subsequently, on August 8, 2005, Appellants filed a Request for Continued Examination (RCE). As the submission, required under 37 CFR 1.114, Appellants filed a copy of the Amendment previously filed, on July 6, 2005, which was in response to the Final Office Action (mailed August 3, 2005).

Subsequent to the filing of the RCE (August 8, 2005), the Examiner issued a non-final Office Action (mailed September 14, 2005). This Office Action (mailed September 14, 2005) implicitly withdrew previous rejections under 35 USC §112 and 35 USC §102, as neither rejection was addressed in this Office Action. Appellants filed a response to the September 14, 2005 Office Action on December 14, 2005 without amending the claims. The Examiner then issued another Final Office Action (mailed March 17, 2006). This Final Office Action (mailed March 17, 2006) was virtually identical to the non-final Office Action mailed September 14, 2005 except for paragraph 6. Therefore, it is the Appellants' belief that the claims listed hereinabove (in section 3) have been entered and are the correct pending claims.

5. Summary of Claimed Subject Matter of Independent Claims 1, 23, 37, 51, and 69

As claimed, this invention is an improved connection for tubular ends, primarily used in

the assembly of tubular strings by the use of interrupted or slotted threads combined with unique shoulder abutments wherein partial turns of one tubular section in relation to another tubular section completes the individual connection while providing superb capability to bear large compressive forces, such as those generated during pile driving, and maintain pipe and joint integrity.(Abstract; page 3 commencing at line 1 through page 14; and Figures 1-15).

Claim 1

The claim language is at least supported as follows:

a first pipe having a female end - Generally described throughout the specification and specifically at least at page 4, lines 1-2; page 4, line 21; Figs. 1 (element 2), 3 (element 2a), 4 (element 2b), 5 (element 2c), 7-10, and 12 -14 (element 41).

a second pipe having a male end - Generally described throughout the specification and specifically at least at page 4, lines 1-2; page 4, line 21; Figs. 1 (element 1), 3 (element 1a), 4 (element 1b), 5 (element 1c), 7-10, and 12 -14 (element 40) .

said female end having an inner surface, an internal annular shoulder, a nose face and an outer surface - Described in detail commencing at page 4, line 24 and in Figures 3 (elements BA and BE), 4 (elements BA and BE), 5 (elements BA1 and BE1), 7 (elements 20 and 23), 8, 9, 10 (element 31), 12, 13, and 14.

said male end having an inner surface, an external annular shoulder, a nose face and an outer surface; - Described in detail commencing at page 4, line 24 and in Figures 3 (elements PA and PE), 4 (elements PA and PE), 5 (elements PA1 and PE1), 7 (elements 21 and 24), 8, 9, 10 (element 32), 12, 13, and 14.

a first plurality of protuberances circumferentially and longitudinally spaced relative to each other about the inner surface of said female end - Described in detail page 3, line 11- page 4, line 20; page 6, line 25 - page 7, line 21; Figs 1 (element TH), 2 (element CP), 11 (element B), and 15 (element 52).

a second plurality of protuberances circumferentially and longitudinally spaced relative

to each other about the outer surface of said male end - Described in detail page 3, line 11- page 4, line 20; page 6, line 25 - page 7, line 21; Figs 1 (element TH), 2 (element CP), 11 (element P), and 15 (element 53).

wherein said circumferential spacing forms a circumferential array comprising at least one longitudinal column on both the inner surface of said female end and the outer surface of said male end - Described in detail page 3, line 11- page 4, line 20; page 6, line 25 - page 7, line 21; Figs 1 (element TH), 2 (element CP), 11 (elements B and P), and 15 (elements 52 and 53).

said internal annular shoulder and said external annular shoulder being each shaped so as for each said internal shoulder and each said external shoulder to receive a mating nose face, wherein at least one said internal shoulder and/or external shoulder and its corresponding mating nose face are shaped to substantially entrap said nose face within the shoulder to substantially restrain radial movement - The shoulders and abutments are described in detail commencing at page 4, line 24 and in Figures 3 (elements BA, BE and PA, PE), 4 (elements BA, BE and PA, PE), 5 (elements BA1, BE1 and PA1, PE1), 7(elements 20, 21 and 23, 24), 8, 9, 10 (elements 32, 32), 12, 13, and 14. Specifically, page 4, lines 27-29 it is described how the abutments and shoulders, when seated together prevent radial separation that is often a result of axial impacts (such as pile driving). Further, commencing at page 4 line 32 through page 5, line 6. it is described having interference fits to prevent unscrewing and describing the importance of radial restraint as hammer blows (such as pile driving) cause the thinner mating part to be thrust toward the nearest radial restraining surface.

said plurality of circumferential arrays aligned such that said plurality of protuberances are accepted by a mating pipe end when said male and female pipe ends move longitudinally relative to each other for forming a connection - Described in detail page 3, line 11- page 4, line 20; page 6, line 25 - page 7, line 21; Figs 1 (element TH), 2 (element CP), 11 (elements B and P), and 15 (elements 52 and 53).

wherein the male and female ends engage upon any rotation of one pipe relative to the other pipe wherein such rotation causes said protuberances of the male end and said

protuberances of the female end to move circumferentially with respect to each other, and wherein the nose face of the male end engages the internal annular shoulder of the female end and the nose face of the female end engages the external annular shoulder of the male end such that compressive loads on the male end and the female end are borne substantially by the shoulders - Described in detail page 3, line 11- page 4, line 20; page 6, line 25 - page 7, line 21; Figs 1 (element TH), 2 (element CP), 11 (elements B and P), and 15 (elements 52 and 53). Further, page 8, commencing at line 8, describes the engagement between the slots and protuberances to produce a coupled joint. See also Figs. 9 (elements 29, 28), 11 (elements B, P), and 15 (elements 52 and 53).

at least one and/or both of said first and second protuberances embodies at least one interference dimension that causes the protuberance to displace a mating protuberance surface - Page 10, commencing at line 4, describes the interference dimensions that causes one protuberance to displace a mating protuberance surface.

Further, the Boards' attention is respectfully directed to page 3, commencing at line 11, wherein the relationship between the slots and protuberances are specifically described (see also Figures 1 (elements S, TH), 2 (elements S, CP), 11 (elements 42, P, B), 9 (elements 29, 28), and 15 (Protuberances - elements 52 and 53). Still, further, the Board's attention is directed at page 4, lines 14-15 , wherein it is described that proper/sufficient shoulders and abutments prevent shock loading the threads. Page 5, commencing at line 22 describes abutment/shoulder connections for the shock loading generated by pile driving.

Claim 23

This independent claim has essentially the same subject matter as described in Claim 1, but is more specific regarding the restraining radial movement and specifying that the abutting surfaces are distinct from the surfaces of the protuberances. Thus, this claim clarifies that the abutments, and not the thread segments, bear the compressive loads resulting from pile driving.

The claim language is at least supported as follows:

a first pipe having a female end - Generally described throughout the specification and specifically at least at page 4, lines 1-2; page 4, line 21; Figs. 1 (element 2), 3 (element 2a), 4 (element 2b), 5 (element 2c), 7-10, and 12 -14 (element 41).

a second pipe having a male end - Generally described throughout the specification and specifically at least at page 4, lines 1-2; page 4, line 21; Figs. 1 (element 1), 3 (element 1a), 4 (element 1b), 5 (element 1c), 7-10, and 12 -14 (element 40).

said female end having an inner surface and an outer surface - Described at page 4, lines 1-20 and Figs. 1, 3, 4, 5, and 7-15.

said male end having an inner surface and an outer surface - Described at page 4, lines 1-20 and Figs. 1, 3, 4, 5, and 7-15.

a first plurality of protuberances circumferentially and longitudinally spaced relative to each other about the inner surface of said female end - Described in detail page 3, line 11- page 4, line 20; page 6, line 25 - page 7, line 21; Figs 1 (element TH), 2 (element CP), 11 (element B), and 15 (element 52).

a second plurality of protuberances circumferentially and longitudinally spaced relative to each other about the outer surface of said male end - Described in detail page 3, line 11- page 4, line 20; page 6, line 25 - page 7, line 21; Figs 1 (element TH), 2 (element CP), 11 (element P), and 15 (element 53).

wherein said circumferential spacing forms a circumferential array comprising at least one longitudinal column on both the inner surface of said female end and the outer surface of said male end - Described in detail page 3, line 11- page 4, line 20; page 6, line 25 - page 7, line 21; Figs 1 (element TH), 2 (element CP), 11 (elements B and P), and 15 (elements 52 and 53).

said plurality of circumferential arrays aligned such that said plurality of protuberances are accepted by a mating pipe end when said male and female pipe ends move longitudinally relative to each other for forming a connection - Described in detail page 3, line 11- page 4, line 20; page 6, line 25 - page 7, line 21; Figs 1 (element TH), 2 (element CP), 11 (elements B and P), and 15 (elements 52 and 53).

wherein the male and female ends engage upon any rotation of one pipe relative to the other pipe wherein such rotation causes said protuberances of the male end and said protuberances of the female end to move circumferentially with respect to each other - Described in detail page 3, line 11- page 4, line 20; page 6, line 25 - page 7, line 21; Figs 1 (element TH), 2 (element CP), 11 (elements B and P), and 15 (elements 52 and 53). Further, page 8, commencing at line 8, describes the engagement between the slots and protuberances to produce a coupled joint. See also Figs. 9 (elements 29, 28), 11 (elements B, P), and 15 (elements 52 and 53).

a first abutting surface on said first pipe end arranged to oppose and mate with a second abutting surface on said second pipe end and a first abutting surface on said second pipe end arranged to oppose and mate with a second abutting surface on said first pipe end when the arrays of protuberances on the male end are substantially juxtaposed with the arrays of protuberances on the female end, wherein said first abutting surfaces and said second abutting surfaces are distinct from surfaces of said protuberances, and wherein at least one of said first abutting surfaces and its corresponding second abutting surface are shaped to substantially entrap said mating second abutting surface within its corresponding mated first abutment surface to substantially restrain radial movement, and further wherein said first abutting surfaces and said second abutting surfaces are pulled into contact, with each other by engagement of the male and female protuberances upon said rotation of one pipe relative to the other pipe - The shoulders and abutments are described in detail commencing at page 4, line 24 and in Figures 3 (elements BA, BE and PA, PE), 4 (elements BA, BE and PA, PE), 5 (elements BA1, BE1 and PA1, PE1), 7 (elements 20, 21 and 23, 24), 8, 9, 10 (elements 32, 32), 12, 13, and 14. Specifically, page 4, lines 27-29 it is described how the abutments and shoulders, when seated together prevent radial separation that is often a result of axial impacts (such as pile driving). Further, commencing at page 4 line 32 through page 5, line 6. it is described having interference fits to prevent unscrewing and describing the importance of radial restraint as hammer blows (such as pile driving) cause the thinner mating part to be thrust toward the nearest radial restraining surface. Further, the Board's attention is directed at page 4, lines 14-15 , wherein it is described that proper/sufficient shoulders and abutments prevent shock loading the threads. Page 5, commencing at line 22 describes abutment/shoulder connections for the shock loading generated

by pile driving.

Claim 37

This claim has essentially the same subject matter as described in Claims 1 and 23 with Claims 1 and 23 being directed to a system, whereas Claim 37 is directed to a method.

The claim language is at least supported as follows:

providing a first pipe having at least one female end, said female end having an inner surface, an internal annular shoulder, a nose face, and an outer surface - Generally described throughout the specification and specifically at least at page 4, lines 1-2; page 4, line 21; and and described in further detail commencing at page 4, line 24; Figs. 1 (element 2), 3 (elements 2a, BA and BE), 4 (elements 2b, BA and BE), 5 (elements 2c, BA1 and BE1), 7 (elements 20 and 23)-10 (element 31), and 12 -14 (element 41).

providing a second pipe having a at least one male end, said male end having an inner surface said male end having an inner surface, an external annular shoulder, a nose face and an outer surface - Generally described throughout the specification and specifically at least at page 4, lines 1-2; page 4, line 21; and described in further detail commencing at page 4, line 24 Figs. 1 (element 1), 3 (elements 1a, PA and PE), 4 (elements 1b, PA, and PE), 5 (elements 1c, PA1, and PE1), 7 (elements 21 and 24)-10 (element 31), and 12 -14 (element 40).

providing a first plurality of protuberances circumferentially and longitudinally spaced relative to each other about the inner surface of said female end - Described in detail page 3, line 11- page 4, line 20; page 6, line 25 - page 7, line 21; Figs 1 (element TH), 2 (element CP), 11 (element B), and 15 (element 52).

providing a second plurality of protuberances circumferentially and longitudinally spaced relative to each other about the outer surface of said male end - Described in detail page 3, line 11- page 4, line 20; page 6, line 25 - page 7, line 21; Figs 1 (element TH), 2 (element CP), 11 (element P), and 15 (element 53).

wherein said circumferential spacing forms a circumferential array comprising at least one longitudinal column on both the inner surface of said female end and the outer surface of said

male end, and wherein said internal annular shoulder and said external annular shoulder being each shaped so as for each said internal shoulder and each said external shoulder to receive a mating nose face, wherein at least one said internal shoulder and/or external shoulder and its corresponding mating nose face are shaped to substantially entrap said nose face within the shoulder to substantially restrain radial movement - Described in detail page 3, line 11- page 4, line 20; page 6, line 25 - page 7, line 21; Figs 1 (element TH), 2 (element CP), 11 (elements B and P), and 15 (elements 52 and 53). The shoulders and abutments are described in detail commencing at page 4, line 24 and in Figures 3 (elements BA, BE and PA, PE), 4 (elements BA, BE and PA, PE), 5 (elements BA1, BE1 and PA1, PE1), 7(elements 20, 21 and 23, 24), 8, 9, 10 (elements 32, 32), 12, 13, and 14. Specifically, page 4, lines 27-29 it is described how the abutments and shoulders, when seated together prevent radial separation that is often a result of axial impacts (such as pile driving). Further, commencing at page 4 line 32 through page 5, line 6. it is described having interference fits to prevent unscrewing and describing the importance of radial restraint as hammer blows (such as pile driving) cause the thinner mating part to be thrust toward the nearest radial restraining surface.

aligning said first pipe and said second pipe such that the female end of said first pipe is aligned to receive the male end of said second pipe - Described in detail page 3, line 11- page 4, line 20; page 6, line 25 - page 7, line 21; Figs 1 (element TH), 2 (element CP), 11 (elements B and P), and 15 (elements 52 and 53). Further, page 8, commencing at line 8, describes the engagement between the slots and protuberances to produce a coupled joint. See also Figs. 9 (elements 29, 28), 11 (elements B, P), and 15 (elements 52 and 53).

further aligning said first pipe and said second pipe wherein said plurality of circumferential arrays are aligned such that said first plurality of protuberances, are accepted by a mating pipe end when the pipe ends move longitudinally relative to each other for forming a connection - Described in detail page 3, line 11- page 4, line 20; page 6, line 25 - page 7, line 21; Figs 1 (element TH), 2 (element CP), 11 (elements B and P), and 15 (elements 52 and 53). Further, page 8, commencing at line 8, describes the engagement between the slots and protuberances to produce a coupled joint. See also Figs. 9 (elements 29, 28), 11 (elements B, P), and 15 (elements 52 and 53).

providing longitudinal movement wherein said male end will enter and mate with said female end - Described in detail page 3, line 11- page 4, line 20; page 6, line 25 - page 7, line 21; Figs 1 (element TH), 2 (element CP), 11 (elements B and P), and 15 (elements 52 and 53). Further, page 8, commencing at line 8, describes the engagement between the slots and protuberances to produce a coupled joint. See also Figs. 9 (elements 29, 28), 11 (elements B, P), and 15 (elements 52 and 53).

continuing longitudinal movement until said male end is fully engaged in said female end - Described in detail page 3, line 11- page 4, line 20; page 6, line 25 - page 7, line 21; Figs 1 (element TH), 2 (element CP), 11 (elements B and P), and 15 (elements 52 and 53). Further, page 8, commencing at line 8, describes the engagement between the slots and protuberances to produce a coupled joint. See also Figs. 9 (elements 29, 28), 11 (elements B, P), and 15 (elements 52 and 53).

rotating one pipe with respect to the other pipe wherein said rotation causes the protuberances of the male and female ends to move circumferentially with respect to each other and wherein the male and female ends engage each other - Described in detail page 3, line 11- page 4, line 20; page 6, line 25 - page 7, line 21; Figs 1 (element TH), 2 (element CP), 11 (elements B and P), and 15 (elements 52 and 53). Further, page 8, commencing at line 8, describes the engagement between the slots and protuberances to produce a coupled joint. See also Figs. 9 (elements 29, 28), 11 (elements B, P), and 15 (elements 52 and 53).

pulling the corresponding internal shoulder and its mating nose face and the external shoulder and its mating nose face into contact, with each other by engagement of the male and female protuberances upon said rotation of one pipe relative to the other pipe, wherein said internal shoulder and its corresponding mating nose face and said external shoulder and its corresponding mating nose face are distinct from surfaces of said protuberances, and wherein the contact of the shoulders and the mating nose faces causes compressive loads on the male end and the female end to be borne substantially by the shoulders - The shoulders and abutments are described in detail commencing at page 4, line 24 and in Figures 3 (elements BA, BE and PA, PE), 4 (elements BA, BE and PA, PE), 5 (elements BA1, BE1 and PA1, PE1), 7 (elements 20,

21 and 23, 24), 8, 9, 10 (elements 32, 32), 12, 13, and 14. Specifically, page 4, lines 27-29 it is described how the abutments and shoulders, when seated together prevent radial separation that is often a result of axial impacts (such as pile driving). Further, commencing at page 4 line 32 through page 5, line 6. it is described having interference fits to prevent unscrewing and describing the importance of radial restraint as hammer blows (such as pile driving) cause the thinner mating part to be thrust toward the nearest radial restraining surface. Further, the Board's attention is directed at page 4, lines 14-15 , wherein it is described that proper/sufficient shoulders and abutments prevent shock loading the threads. Page 5, commencing at line 22 describes abutment/shoulder connections for the shock loading generated by pile driving.

Claim 51

This claim has essentially the same subject matter as described in Claims 1 and 23 but are more specific regarding the general shape and placement of the thread segments as well as claiming the restraint of radial movement and specifying that the abutting surfaces are distinct from the surfaces of the protuberances.

The claim language is at least supported as follows:

a first pipe end with a socket and a second pipe end with a pin to mate with said socket - Generally described throughout the specification and specifically at least at page 4, lines 1-2; page 4, line 21; Figs. 1 (elements 1 and 2), 3 (elements 1a and 2a), 4 (elements 1b and 2b), 5 (elements 1c and 2c), 7-10, and 12 -14 (elements 40 and 41).

a plurality of first cam patches of first arcuate cams extending peripherally about the inner surface of said socket, said first cam patches separated by surfaces defining peripherally extending first slots - Described in detail page 3, line 11- page 4, line 20; page 6, line 25 - page 7, line 21; Figs 1 (element TH), 2 (element CP), 11 (element B), and 15 (element 52).

a plurality of second cam patches of second arcuate cams extending peripherally about the outer surface of said pin, said second cam patches separated by surfaces defining peripherally extending second slots - Described in detail page 3, line 11- page 4, line 20; page 6, line 25 - page 7, line 21; Figs 1 (element TH), 2 (element CP), 11 (element P), and 15 (element 53).

all said slots and patches arranged such that said patches are accepted by said slots when

said pin end is axially inserted into said socket - Described in detail page 3, line 11- page 4, line 20; page 6, line 25 - page 7, line 21; Figs 1 (element TH), 2 (element CP), 11 (elements B and P), and 15 (elements 52 and 53).

all said arcuate cams axially distributed some distance and comprising lands and grooves peripherally extending some distance in a selected helical direction, said grooves configured to accept said lands when rotation of said box relative to said pin causes said lands to move peripherally along said grooves - Described in detail page 3, line 11- page 4, line 20; page 6, line 25 - page 7, line 21; Figs 1 (element TH), 2 (element CP), 11 (elements B and P), and 15 (elements 52 and 53).

a first abutting surface on said first pipe arranged to oppose and mate with a second abutting surface on said second pipe and a first abutting surface on said second pipe arranged to oppose and mate with a second abutting surface on said first pipe, with a selected axial force, when said patches on said pin are approximately juxtaposed with said patches on said socket - The shoulders and abutments are described in detail commencing at page 4, line 24 and in Figures 3 (elements BA, BE and PA, PE), 4 (elements BA, BE and PA, PE), 5 (elements BA1, BE1 and PA1, PE1), 7 (elements 20, 21 and 23, 24), 8, 9, 10 (elements 32, 32), 12, 13, and 14. Specifically, page 4, lines 27-29 it is described how the abutments and shoulders, when seated together prevent radial separation that is often a result of axial impacts (such as pile driving). Further, commencing at page 4 line 32 through page 5, line 6. it is described having interference fits to prevent unscrewing and describing the importance of radial restraint as hammer blows (such as pile driving) cause the thinner mating part to be thrust toward the nearest radial restraining surface. Further, the Board's attention is directed at page 4, lines 14-15 , wherein it is described that proper/sufficient shoulders and abutments prevent shock loading the threads. Page 5, commencing at line 22 describes abutment/shoulder connections for the shock loading generated by pile driving.

wherein said abutting surfaces are pulled into contact, with each other by engagement of the pin and socket patches upon said rotation of said box relative to said pin, and wherein said abutting surfaces are distinct from surfaces of the pin and socket patches and wherein at least one

of said first abutting surfaces and its corresponding second abutting surface are shaped to substantially entrap said mating second abutting surface within its corresponding mated first abutment surface to substantially restrain radial movement - The shoulders and abutments are described in detail commencing at page 4, line 24 and in Figures 3 (elements BA, BE and PA, PE), 4 (elements BA, BE and PA, PE), 5 (elements BA1, BE1 and PA1, PE1), 7 (elements 20, 21 and 23, 24), 8, 9, 10 (elements 32, 32), 12, 13, and 14. Specifically, page 4, lines 27-29 it is described how the abutments and shoulders, when seated together prevent radial separation that is often a result of axial impacts (such as pile driving). Further, commencing at page 4 line 32 through page 5, line 6. it is described having interference fits to prevent unscrewing and describing the importance of radial restraint as hammer blows (such as pile driving) cause the thinner mating part to be thrust toward the nearest radial restraining surface. Further, the Board's attention is directed at page 4, lines 14-15 , wherein it is described that proper/sufficient shoulders and abutments prevent shock loading the threads. Page 5, commencing at line 22 describes abutment/shoulder connections for the shock loading generated by pile driving.

Claim 69

This claim has essentially the same subject matter as described in Claims 1, 23, and 57 but are more specific regarding the abutment configuration.

The claim language is at least supported as follows:

first and second pipe ends to be threadedly joined, said first pipe having female configuration defined as a box, the second pipe having mating male configurations defined as a pin Generally described throughout the specification and specifically at least at page 4, lines 1-2; page 4, line 21; Figs. 1 (elements 1 and 2), 3 (elements 1a and 2a), 4 (elements 1b and 2b), 5 (elements 1c and 2c), 7-10, and 12 -14 (elements 40 and 41).

the box having, in series, a first abutment surface defining one end of the first pipe, a first unthreaded length, a first threaded length, a second unthreaded length, and a second abutment surface to terminate the box configuration on the first pipe - The shoulders and abutments are described in detail commencing at page 4, line 24 and in Figures 3 (elements BA, BE and PA, PE), 4 (elements BA, BE and PA, PE), 5 (elements BA1, BE1 and PA1, PE1), 7 (elements 20, 21 and 23, 24), 8, 9, 10 (elements 32, 32), 12, 13, and 14. Specifically, page 4, lines 27-29 it is described how the abutments and shoulders, when seated together prevent radial separation that

is often a result of axial impacts (such as pile driving). Further, commencing at page 4 line 32 through page 5, line 6. it is described having interference fits to prevent unscrewing and describing the importance of radial restraint as hammer blows (such as pile driving) cause the thinner mating part to be thrust toward the nearest radial restraining surface. Further, the Board's attention is directed at page 4, lines 14-15 , wherein it is described that proper/sufficient shoulders and abutments prevent shock loading the threads. Page 5, commencing at line 22 describes abutment/shoulder connections for the shock loading generated by pile driving.

the pin having, in series, a third abutment surface to mate said second abutment surface, a third unthreaded length to be received in the second unthreaded length, a second threaded length to mate with the first threaded length, a fourth unthreaded length to be received in the first unthreaded length, and a fourth abutment surface to mate with the first abutment surface and terminate the pin configuration, wherein at least one of the mating third and second abutment surfaces and/or the mating fourth and first abutment surfaces are shaped so as to substantially entrap the second or fourth abutment within its correspondingly mating first or third abutment - The shoulders and abutments are described in detail commencing at page 4, line 24 and in Figures 3 (elements BA, BE and PA, PE), 4 (elements BA, BE and PA, PE), 5 (elements BA1, BE1 and PA1, PE1), 7 (elements 20, 21 and 23, 24), 8, 9, 10 (elements 32, 32), 12, 13, and 14. Specifically, page 4, lines 27-29 it is described how the abutments and shoulders, when seated together prevent radial separation that is often a result of axial impacts (such as pile driving). Further, commencing at page 4 line 32 through page 5, line 6. it is described having interference fits to prevent unscrewing and describing the importance of radial restraint as hammer blows (such as pile driving) cause the thinner mating part to be thrust toward the nearest radial restraining surface. Further, the Board's attention is directed at page 4, lines 14-15 , wherein it is described that proper/sufficient shoulders and abutments prevent shock loading the threads. Page 5, commencing at line 22 describes abutment/shoulder connections for the shock loading generated by pile driving.

the first and second threaded lengths, each, comprising at least two patches of incomplete threads on the pin and similar and mating patches of incomplete threads in the box, all said patches formed by peripheral thread cut-outs producing surfaces to define slots which will accept

the patches when the box receives the pin in axial relative movement, the patches on the pin arranged to engage the patches in the box when the pin is rotated relative to the box, at least one of said incomplete thread embodies at least one interference dimension that causes the incomplete thread to displace a mating incomplete thread surface when the patches on the pin engage the patches on the box, said abutting surfaces to be axially force loaded, when said at least one mating incomplete thread surface is displaced, a preselected amount when the patches on the pin are approximately juxtaposed with the patches on the box, wherein the abutment surfaces are distinct from surfaces of said patches of incomplete threads - The shoulders and abutments are described in detail commencing at page 4, line 24 and in Figures 3 (elements BA, BE and PA, PE), 4 (elements BA, BE and PA, PE), 5 (elements BA1, BE1 and PA1, PE1), 7 (elements 20, 21 and 23, 24), 8, 9, 10 (elements 32, 32), 12, 13, and 14. Specifically, page 4, lines 27-29 it is described how the abutments and shoulders, when seated together prevent radial separation that is often a result of axial impacts (such as pile driving). Further, commencing at page 4 line 32 through page 5, line 6. it is described having interference fits to prevent unscrewing and describing the importance of radial restraint as hammer blows (such as pile driving) cause the thinner mating part to be thrust toward the nearest radial restraining surface. Further, the Board's attention is directed at page 4, lines 14-15 , wherein it is described that proper/sufficient shoulders and abutments prevent shock loading the threads. Page 5, commencing at line 22 describes abutment/shoulder connections for the shock loading generated by pile driving. Page 10, commencing at line 4, describes the interference dimensions that causes one protuberance to displace a mating protuberance surface.

Further, the Boards' attention is respectfully directed to page 3, commencing at line 11, wherein the relationship between the slots and protuberances are specifically described (see also Figures 1 (elements S, TH), 2 (elements S, CP), 11 (elements 42, P, B), 9 (elements 29, 28), and 15 (Protuberances - elements 52 and 53). Still, further, the Board's attention is directed at page 4, lines 14-15 , wherein it is described that proper/sufficient shoulders and abutments prevent shock loading the threads. Page 5, commencing at line 22 describes abutment/shoulder connections for the shock loading generated by pile driving.

6. Grounds of Rejection to be Reviewed on Appeal

1. Whether Claims 1, 4-5, 7, 10, 12, 14, 18, and 20 are unpatentable under 35 U.S.C.

103(a) over U.S. Patent No. 1,507,877 to Wilson in view of U.S. Patent No. 5,709,416 to Wood?

2. Whether Claims 23, 26, 29, and 34-35 are unpatentable under 35 U.S.C. 103(a) over U.S. Patent No. 1,507,877 to Wilson in view of U.S. Patent No. 5,709,416 to Wood?

3. Whether Claims 37 and 39 are unpatentable under 35 U.S.C. 103(a) over U.S. Patent No. 1,507,877 to Wilson in view of U.S. Patent No. 5,709,416 to Wood?

4. Whether Claims 51, 54, 60, 61, and 63 are unpatentable under 35 U.S.C. 103(a) over U.S. Patent No. 1,507,877 to Wilson in view of U.S. Patent No. 5,709,416 to Wood?

5. Whether Claims 69, 72, and 73 are unpatentable under 35 U.S.C. 103(a) over U.S. Patent No. 1,507,877 to Wilson in view of U.S. Patent No. 5,709,416 to Wood?

6. Whether Claims 1-5, 7, 10, 12-15, and 17-21 are unpatentable under 35 U.S.C. 103(a) over U.S. Patent No. 6,283,511 to Kamp in view of U.S. Patent No. 5,709,416 to Wood?

7. Whether Claims 23, 26, 28, 29, and 32-36 are unpatentable under 35 U.S.C. 103(a) over U.S. Patent No. 6,283,511 to Kamp in view of U.S. Patent No. 5,709,416 to Wood?

8. Whether Claims 37-39 are unpatentable under 35 U.S.C. 103(a) over U.S. Patent No. 6,283,511 to Kamp in view of U.S. Patent No. 5,709,416 to Wood?

9. Whether Claims 51, 54, 56-58, 60, 61, and 63-66 are unpatentable under 35 U.S.C. 103(a) over U.S. Patent No. 6,283,511 to Kamp in view of U.S. Patent No. 5,709,416 to Wood?

10. Whether Claims 69, 72, and 73 are unpatentable under 35 U.S.C. 103(a) over U.S. Patent No. 6,283,511 to Kamp in view of U.S. Patent No. 5,709,416 to Wood?

11. Whether Claims 1, 4-6, and 12-14 are unpatentable under 35 U.S.C. 103(a) over U.S. Patent No. 4,185,856 to McCaskill in view of U.S. Patent No. 5,709,416 to Wood?

12. Whether Claims 37-39 are unpatentable under 35 U.S.C. 103(a) over U.S. Patent No. 4,185,856 to McCaskill in view of U.S. Patent No. 5,709,416 to Wood?

7. Argument.

Claims 1-7, 10, 12-15, 17-21, 23, 26, 28, 29, 32-39, 51, 54, 56-58, 60, 61, 63-66, 69, 72, and 73 do not stand or fall together as they are separately patentable and therefore must be separately reviewed in light of the appealed rejections under 35 U.S.C. 103. Thus each of the independent Claims 1, 23, 37, 51, and 69, are separately patentable and cannot stand or fall together.

Appellants respectfully submit that although, as discussed above, the claims do not stand or fall together, at least a portion of the argument, in support of each claim, is similar. Therefore, to avoid redundancy of arguments, Appellants will incorporate, as necessary, by reference the arguments, which apply instead of separately and redundantly repeating such argument. By this approach, Appellants are in no way waiving that the Board must consider the patentability of the claims separately but are only arranging the arguments as a way to maintain clarity and ease of understanding of the arguments.

The Examiner has made a broad generalization that any connection that has any shoulder or abutment face is thereby capable of absorbing shock loading and compressive forces. Appellants respectfully submit that this generalization is simply incorrect as pile driving large diameter pipe into the ground produces tremendous shock loads and compressive loads on the connections. The art cited and applied by the Examiner was not concerned about pile driving the connected pipe and thus did not teach nor disclose anything about bearing the tremendous shock and compressive loads by the pipe connection. In many non-pile driving applications, it may have been suitable, in the cited art, to rely only on the threads to absorb any loading of the threaded connection. The mere fact that a shoulder and abutment face exist does not teach absorbing the loading unless the mating abutment faces contact so as to restrain radial movement and/or absorb the forces of the pile driving.

1. Claims 1, 4-5, 7, 10, 12, 14, 18, and 20 are patentable under 35 U.S.C. 103(a) over U.S. Patent No. 1,507,877 to Wilson in view of U.S. Patent No. 5,709,416 to Wood.

Appellants respectively submit that both Wilson and Wood are not the least bit

concerned with pile driving pipe or tubulars into the earth. Thus, neither Wilson nor Wood have any concern, or any teachings regarding any compressive forces generated by pile driving nor how these forces must be dealt with. What the Examiner alleges to be Wood's teachings regarding compression loading (Wood, Col. 3, lines 45-51) is actually the re-direction of forces to an axial direction thus preventing any rotation of the threaded joint in a direction so as to loosen the threaded joint and not with bearing compressive loads such as may be due to the coupled pipe being driven into the earth.

In sharp contrast, the Appellants' shoulders are designed so as to bear the compressive forces. Although not the only application, one of the important applications of the Appellants' invention is having the shoulders bear the compressive forces which result when a coupled pipe is being driven into the earth such as by hammering. The Appellants' unique design allows the shoulders to bear the compressive weight as opposed to the threads.

Further, Appellants submit that both Wilson and Wood teach that the threads actually bear the compressive load (Wilson - lines 103-106).

More specifically, Wood teaches that the threads are undercut to specifically be load bearing surfaces of the box and pin respectively (column 3, line 63 - column 4 line 2; column 4, lines 9-16). Appellants further submit that although Wood discusses that the undercut threads, the mortise, and the tenon transfer all vector forces into the axial direction, if the Wood threads are subjected to the large compressive forces, such as those generated by the driving of the pipe into the earth, there is no teaching by Wood that the Wood shoulders would be sufficient to support such compressive loading without damage to the threads. Appellants further respectfully bring to the Examiner's attention that Wood does not describe the shoulders clearly. Although the specification, regarding FIGS. 4-5 and 6-7, describes load bearing surfaces 1-6 and 8-12, respectfully, there are no elements numbered as such on FIGS. 4-7, or any of the other figures, thus making it very difficult to determine exactly which surfaces are the load bearing surfaces. However, it is clear from Wood's description at column 3, lines 34-45 and FIG 11, that the tenon and mortise do not fully contact each other and thus can not be intended to be load bearing surfaces that could carry at least a substantial amount of the force. In sharp contrast, the Appellants' shoulders do fully mate and are intended to be load bearing.

As per Claim 1, Appellants respectfully submit that neither Wilson nor Wood, alone or in combination, teach, disclose, nor suggest that at least one of said protuberances embodies at

least one interference dimension that causes the protuberance to displace a mating protuberance surface. This is an element of the claim, which the Examiner fails to address in the Office Action and which Appellants respectfully submit is at least one of the patentably distinguishing features. The Appellants have twice recited this limitation in their response to an Office Action (responses filed July 6, 2005 and December 14, 2005) and the Examiner has failed to address this limitation which is not shown by either the Wilson or Wood reference.

Further, Appellants respectfully submit that neither Wilson nor Wood teach that at least one of the double shoulders and corresponding mating nose ends are shaped so as to substantially entrap the nose end within the shoulder **to absorb shock loads** which may occur in at least one application of the invention due to hammering when the connected pipes are forced into the earth. In sharp contrast, the Appellants' double shoulder design allows for the shoulders/abutments and the mating nose ends to absorb the hammering impacts and thus substantially reduce or eliminate the shock loads or compressive forces on the thread surfaces. Further by having at least one shoulder and mating nose end shaped so as to substantially entrap the nose within the shoulder, the Appellants can substantially restrain the radial forces, from the hammering, from causing damage to the tubulars at the connection point. Thus, it is respectfully submitted that Wood does not add anything to Wilson which discloses or makes obvious the instant invention.

2. Claims 23, 26, 29, and 34-35 are patentable under 35 U.S.C. 103(a) over U.S. Patent No. 1,507,877 to Wilson in view of U.S. Patent No. 5,709,416 to Wood.

Appellants incorporate subsection 7.1, hereinabove, by reference.

Neither Wilson nor Wood teach suggest, nor even disclose that the abutting surfaces are distinct from the surfaces of the threads. As discussed in subparagraph 7.1, it is clear that both Wilson and Wood intend the threads to have load bearing surfaces. Further, it is clear that Wilson relies on a continuous thread 22 to be in contact with lowest thread 20 from the beginning of making the joint (Wilson - lines 24-29). Thus, Appellants respectively submit neither Wilson nor Wood teach, disclose, nor even suggest that the load bearing or abutment surfaces are distinct from the surfaces of the threads (protuberances).

3. Claims 37 and 39 are patentable under 35 U.S.C. 103(a) over U.S. Patent No. 1,507,877 to Wilson in view of U.S. Patent No. 5,709,416 to Wood.

Appellants incorporate subsection 7.1 and 7.2, hereinabove, by reference.

Appellants respectfully submit that neither Wilson nor Wood teach, disclose, nor even suggest that the mating of the respective pipe ends pulls the nose faces into contact with each other, that these corresponding faces of a mating nose and shoulder are distinct from the surfaces of the threads, and that the nose faces cause the compressive loads to be borne substantially by the corresponding mating shoulder.

4. Claims 51, 54, 60, 61, and 63 are patentable under 35 U.S.C. 103(a) over U.S. Patent No. 1,507,877 to Wilson in view of U.S. Patent No. 5,709,416 to Wood.

Appellants incorporate subsection 7.1, 7.2, and 7.3, hereinabove, by reference.

Appellants respectfully submit that neither Wilson nor Wood teach, disclose, nor even suggest that the mating of the respective pipe ends pull respective abutting surfaces together, that the abutting surfaces referred to are distinct from the surfaces of the threads, and that these mated abutting surfaces substantially restrained radial movement. Neither Wilson nor Wood teach, disclose, nor even suggest restraining radial movement because that is not a concern with the pipe employed by both Wilson and Wood. Wilson was filed in 1921 at a time when wells were not very deep (Wilson at lines 19-23 refers to a well or tubing string measuring two to three thousand feet) and the drill string and tubing were not very large in diameter. Wood specifically references drill sting pipe (Wood - Col. 1, lines 10-12). Typically, these pipes have substantial wall thickness and are never hammered into the ground. Thus, there would be no need for either Wilson or Wood to be concerned about radial movement due to hammering. In sharp contrast, The Appellants' connection is used for very large diameter pipe thus the wall thickness is not proportionately as thick as it is in smaller pipes. Further, the wall is thinner at the thread area and thus the concern to restrain radial movement is very important for the integrity of the completed joint.

5. Claims 69, 72, and 73 are patentable under 35 U.S.C. 103(a) over U.S. Patent No. 1,507,877 to Wilson in view of U.S. Patent No. 5,709,416 to Wood.

Appellants incorporate subsection 7.1, 7.2, 7.3, and 7.4, hereinabove, by reference.

Appellants respectfully submit that neither Wilson nor Wood teach, disclose, nor even suggest that the compressive force supporting abutment surfaces are distinct from the surfaces of the threads nor do they teach, disclose, nor even suggest that one incomplete thread will displace a mating incomplete thread by a preselected amount. As discussed in subparagraph 7.1. hereinabove, the Examiner has never addressed this limitation with respect to Wilson or Wood.

6. Claims 1-5, 7, 10, 12-15, and 17-21 are patentable under 35 U.S.C. 103(a) over U.S. Patent No. 6,283,511 to Kamp in view of U.S. Patent No. 5,709,416 to Wood.

The Examiner alleges that it would have been obvious to one having ordinary skill in the art to configure the abutment surfaces of Kamp as taught by Wood. Appellants respectfully submit that the Wood and Kamp connections embody different design philosophy and as such there would be no motivation to combine the mortice and tenon teachings of Wood with Kamp.

Kamp clearly teaches a single shoulder surface 7, 57. Kamp's element 20 is an engaging tooth (see col. 6, lines 15-16) and the abutment surface 35 is formed on an axial projection of the tooth 20 (see Col. 11, lines 28-29) Kamp's element 86 is formed on a radial projection of abutment surface 85 (see Col. 11, lines 37-38). Thus, Kamp teaches a rotational stop, together identified as tooth 20, its abutment surface 35 and element 86 and its abutment surface 85. Wood, at column 3, lines 62–63, describes that the necessary coupling occurs during the last infinitesimal turn of the pin on the box. Kamp's rotational stop is to prevent overturning. Thus, Appellants respectfully submit that the tenon/mortice design of Wood, which relies on turning until coupled, and the positive rotational stop of Kamp are not adaptable to each other as it is possible that the positive rotational stop of Kamp would prevent the complete coupling required by the teachings of Wood; thus, destroying the purpose of Wood. There is thus no motivation to combine the disclosures of Kamp and Wood, which, as a matter of law, precludes their being combined as a reference under 35 U.S.C.

Further, Appellants respectfully submit that Kamp does not teach, disclose, nor suggest the utilization of double shoulders mating so as to **bear compressive loads** to which the male and female ends are exposed during at least one application of the invention such as the hammering of the tubulars into the earth. Because Wood also does not teach nor suggest the utilization of the shoulders mating so as to **bear compressive loads** to which the male and female ends are exposed during the hammering of the tubulars into the earth, Wood does not add anything to Kamp.

Further, neither Wood nor Kamp, alone or in combination, teach, disclose, nor even suggest mating double shoulders nor that these shoulders bear compressive forces, as opposed to the teeth/protuberances, nor that an entrapment of nose end within a mating shoulder end restrains radial movement of the tubular, such as during hammering, to avoid damage to the

tubular connection.

Neither Kamp nor Wood, alone or in combination, teach, disclose, nor suggest that at least one of said protuberances embodies at least one interference dimension that causes the protuberance to displace a mating protuberance surface. This is an element of the claim, which the Examiner fails to address in the Office Actions, which Appellants respectfully submit is at least one of the patentably distinguishing features, and this limitation is not shown by either the Kamp or Wood reference.

Thus, in summary, there is no motivation to combine the teachings of Wood with Kamp because Wood does not add anything to the Kamp connection, which discloses or makes obvious the instant invention. Further, Appellants submit that the stop lugs of Kamp would destroy the purpose of Wood because Wood requires for the threads to be rotated until tight with load bearing surfaces (surfaces of the threads) in contact with each other.

7. Claims 23, 26, 28, 29, and 32-36 are patentable under 35 U.S.C. 103(a) over U.S. Patent No. 6,283,511 to Kamp in view of U.S. Patent No. 5,709,416 to Wood.

Appellants incorporate subsection 7.6, hereinabove, by reference.

Neither Kamp nor Wood teach suggest, nor even disclose that the abutting surfaces are distinct from the surfaces of the threads. As discussed in subparagraph 7.6, it is clear that both Kamp and Wood intend the threads to have load bearing surfaces. Thus, Appellants respectively submit neither Kamp nor Wood teach, disclose, nor even suggest that the load bearing abutment surfaces are distinct from the surfaces of the threads (protuberances).

8. Claims 37-39 are patentable under 35 U.S.C. 103(a) over U.S. Patent No. 6,283,511 to Kamp in view of U.S. Patent No. 5,709,416 to Wood.

Appellants incorporate subsection 7.6 and 7.7, hereinabove, by reference.

Appellants respectfully submit that neither Kamp nor Wood teach, disclose, nor even suggest that the mating of the respective pipe ends pulls the nose faces into contact with each other, that these corresponding faces of a mating nose and shoulder are distinct from the surfaces of the threads, and that the nose faces cause the compressive loads to be borne substantially by the corresponding mating shoulder. As discussed hereinabove, adapting the Wood mortise and tenon to the Kamp connection would defeat the purpose of Wood as the Kamp rotational stop may prevent complete coupling and will lead to connection failure during pile driving.

9. Claims 51, 54, 56-58, 60, 61, and 63-66 are patentable under 35 U.S.C. 103(a) over

U.S. Patent No. 6,283,511 to Kamp in view of U.S. Patent No. 5,709,416 to Wood.

Appellants incorporate subsection 7.6, 7.7, and 7.8, hereinabove, by reference.

Appellants respectfully submit that neither Kamp nor Wood teach, disclose, nor even suggest that the mating of the respective pipe ends pull respective abutting surfaces together, that the abutting surfaces referred to are distinct from the surfaces of the threads, and that these mated abutting surfaces substantially restrain radial movement. Neither Kamp nor Wood teach, disclose, nor even suggest restraining radial movement because that is not a concern with the pipe employed by both Kamp and Wood. Kamp (Col. 1, lines 11-20) and Wood (Wood - Col. 1, lines 10-12) both refer to the use of drill string and connecting the drill pipe used to form the drill string. Typically, these pipes have substantial wall thickness (in proportion to the diameter) and are never hammered into the ground. Thus, there would be no need for either Kamp or Wood to be concerned about radial movement due to hammering. In sharp contrast, the Appellants' connection is used for very large diameter pipe thus the wall thickness is not proportionately as thick as it is in smaller pipes. Further, the wall is thinner at the thread area and thus the concern to restrain radial movement, particularly during pile driving, is very important for the integrity of the completed joint.

10. Claims 69, 72, and 73 are patentable under 35 U.S.C. 103(a) over U.S. Patent No. 6,283,511 to Kamp in view of U.S. Patent No. 5,709,416 to Wood.

Appellants incorporate subsection 7.6, 7.7, 7.8, and 7.9, hereinabove, by reference.

Appellants respectfully submit that neither Kamp nor Wood teach, disclose, nor even suggest that the compressive force supporting abutment surfaces are distinct from the surfaces of the threads nor do they teach, disclose, nor even suggest that one incomplete thread will displace a mating incomplete thread by a preselected amount. As discussed in subparagraph 7.6. hereinabove, the Examiner has never addressed this limitation with respect to Kamp or Wood.

11. Claims 1, 4-6, and 12-14 are patentable under 35 U.S.C. 103(a) over U.S. Patent No. 4,185,856 to McCaskill in view of U.S. Patent No. 5,709,416 to Wood.

McCaskill is a sub-sea connector which does not suggest a need for having shoulders to bear the compressive loads that otherwise must be borne by the threads or protuberances. Appellants respectfully submit that McCaskill does not teach, disclose, nor suggest the utilization of **double shoulders and corresponding nose ends** mating so as to bear compressive loads. Further, McCaskill uses stop lugs 90 and 78 to limit the rotation for making the joint. After stop

lugs 90 and 78 contact to limit the rotation, a latch 92 is used so as to effectively sandwich stop lug 78 between stop lug 90 and latch 92. This prevents any rotation of the coupled parts in any direction.

There is no motivation to combine the teachings of Wood with McCaskill because Wood does not add anything to the McCaskill connection. Further, Appellants submit that the stop lugs of McCaskill would destroy the purpose of Wood because Wood requires for the threads to be rotated until tight with load bearing surfaces in contact with each other.

McCaskill teaches a **single** shoulder at surfaces 62, 72 with stop lugs and latches and thus requires no other shoulders. Because McCaskill would not be used for connecting pipe being hammered into the earth and such is at least one application of the Appellants' connection, McCaskill does not require load bearing surfaces for heavy axial loads. Further, the teachings provided by Wood, are not necessary for McCaskill since McCaskill relies on latches to prevent rotation and maintain a connection.

12. Claims 37-39 are patentable under 35 U.S.C. 103(a) over U.S. Patent No. 4,185,856 to McCaskill in view of U.S. Patent No. 5,709,416 to Wood.

Appellants incorporate subsection 7.11, hereinabove, by reference.

Appellants respectfully submit that McCaskill does not teach, disclose, nor even suggest that the mating of the respective pipe ends pulls the nose faces into contact with each other, that these corresponding faces of a mating nose and shoulder are distinct from the surfaces of the threads (the abutment surfaces are distinct from the surfaces of the threads/protuberances; McCaskill teaches other abutment surfaces (stop lugs) and Wood teaches load bearing surfaces on the threads), and that the nose faces cause the compressive loads to be borne substantially by the corresponding mating shoulder.

Conclusion

None of the cited art, taken alone or in combination, discloses, teaches, or even suggests a connection or a method of making a connection that is quick to make-up or break-out and that can resist the forces of pile driving without compromising the integrity of the connection. Neither Kamp nor McCaskill teach nor disclose a connection having double shoulders with mating nose ends and neither Kamp nor McCaskill can be combined with Wood without destroying the purpose of that invention. Neither Wilson, Kamp, McCaskill, nor Wood teach, disclose, nor even suggest that connected tubulars can be hammered into the earth and that the double shoulders can

bear the compressive loads, such as may be generated by the hammering and thus substantially prevent the compressive shock loads from being transmitted to the threads.

It is therefore respectfully submitted that Claims 1-7, 10, 12-15, 17-21, 23, 26, 28, 29, 32-39, 51, 54, 56-58, 60, 61, 63-66, 69, 72, and 73 are patentably distinct over the art of record. Appellants courteously solicit the allowance of Claims 1-7, 10, 12-15, 17-21, 23, 26, 28, 29, 32-39, 51, 54, 56-58, 60, 61, 63-66, 69, 72, and 73. Although Appellants believe that no additional fees are required, beyond the fees previously submitted with the filing of the Appeal Brief, on August 21, 2006, the Commissioner is hereby respectfully authorized to deduct such additional fees or refund any overpayment, as might be required, from or to Deposit Account Number 13-2166.

8. Claims Appendix

See attached Claims Appendix.

9. Evidence Appendix

None.

10. Related Proceedings Appendix

None.

Respectfully submitted,

Date Dec. 21, 2006

Taras P. Bemko.
Registration No. 52,609
The Matthews Firm (Customer # 021897)
2000 Bering, Ste. 700
Houston, Texas 77057
(713) 355-4200 - Telephone
(713) 355-9689 - Facsimile

8. Claims Appendix

1. A connection for assembly of pipe, the connection comprising:

a first pipe having a female end;

a second pipe having a male end;

said female end having an inner surface, an internal annular shoulder, a nose face and an outer surface;

said male end having an inner surface, an external annular shoulder, a nose face and an outer surface;

a first plurality of protuberances circumferentially and longitudinally spaced relative to each other about the inner surface of said female end;

a second plurality of protuberances circumferentially and longitudinally spaced relative to each other about the outer surface of said male end;

wherein said circumferential spacing forms a circumferential array comprising at least one longitudinal column on both the inner surface of said female end and the outer surface of said male end;

said internal annular shoulder and said external annular shoulder being each shaped so as for each said internal shoulder and each said external shoulder to receive a mating nose face, wherein at least one said internal shoulder and/or external shoulder and its corresponding mating nose face are shaped to substantially entrap said nose face within the shoulder to substantially restrain radial movement;

said plurality of circumferential arrays aligned such that said plurality of protuberances are accepted by a mating pipe end when said male and female pipe ends move longitudinally relative to each other for forming a connection,

wherein the male and female ends engage upon any rotation of one pipe relative to the

other pipe wherein such rotation causes said protuberances of the male end and said protuberances of the female end to move circumferentially with respect to each other, and wherein the nose face of the male end engages the internal annular shoulder of the female end and the nose face of the female end engages the external annular shoulder of the male end such that compressive loads on the male end and the female end are borne substantially by the shoulders; and

at least one and/or both of said first and second protuberances embodies at least one interference dimension that causes the protuberance to displace a mating protuberance surface.

2. The connection according to claim 1 wherein said plurality of arrays comprises an odd number of said arrays.

3. The connection according to claim 2 wherein an odd number of arrays provides a positive determination of a circumferential starting point for engaging the respective protuberances of the male and female ends.

4. The connection according to claim 1 wherein said connection is used for connecting pipe, which is being driven into the earth.

5. The connection according to claim 1 wherein said female end and said male end are produced at the end of separate rings, and wherein said separate rings are attached to said first pipe and said second pipe.

6. The connection according to claim 5 wherein said separate rings are attached by welding.

7. The connection according to claim 1 wherein at least some of said protuberances are shaped to be radially captured to prevent radial expansion of the female end relative to the male end.

10. The connection according to claim 1 wherein the protuberances are produced by at least one screw thread on said male end and a mating thread arrangement in said female end wherein all said threads are interrupted by slots.

12. The connection according to claim 1 wherein the arrays of protuberances have at least some lead angle wherein mating of the protuberances, of the respective female and male ends, causes further longitudinal movement and resists free rotation in a direction opposite of the rotation direction for engagement.

13. The connection according to claim 1 wherein the arrays of protuberances have no lead angle.

14. The connection according to claim 1 wherein the protuberances are axially pre-loaded as a result of dimensional relationships and the rotation of one pipe relative to the other pipe.

15. The connection according to claim 1 wherein at least one protuberance in said arrays of protuberances is engagable by another protuberance to limit said rotation of one pipe relative to the other pipe.

17. The connection according to claim 1 wherein the protuberances are substantially wedged

shaped.

18. The connection according to claim 1 wherein said circumferential arrays form an interrupted taper thread.

19. The connection according to claim 1 wherein said circumferential arrays form an interrupted straight thread.

20. The connection according to claim 1 wherein at least one conical surface on said first pipe end is engaged and force loaded by a mating surface on said second pipe end when the connection is made up.

21. The connection according to claim 20 wherein said at least one conical surface is shaped to accept at least one seal when the connection is made up.

23. A connection for assembly of pipe, the connection comprising:

a first pipe having a female end;

a second pipe having a male end;

said female end having an inner surface and an outer surface;

said male end having an inner surface and an outer surface;

a first plurality of protuberances circumferentially and longitudinally spaced relative to each other about the inner surface of said female end;

a second plurality of protuberances circumferentially and longitudinally spaced relative to each other about the outer surface of said male end;

wherein said circumferential spacing forms a circumferential array comprising at least one longitudinal column on both the inner surface of said female end and the outer surface of said male end;

said plurality of circumferential arrays aligned such that said plurality of protuberances are accepted by a mating pipe end when said male and female pipe ends move longitudinally relative to each other for forming a connection; and

wherein the male and female ends engage upon any rotation of one pipe relative to the other pipe wherein such rotation causes said protuberances of the male end and said protuberances of the female end to move circumferentially with respect to each other; and

a first abutting surface on said first pipe end arranged to oppose and mate with a second abutting surface on said second pipe end and a first abutting surface on said second pipe end arranged to oppose and mate with a second abutting surface on said first pipe end when the arrays of protuberances on the male end are substantially juxtaposed with the arrays of protuberances on the female end, wherein said first abutting surfaces and said second abutting surfaces are distinct from surfaces of said protuberances, and wherein at least one of said first abutting surfaces and its corresponding second abutting surface are shaped to substantially entrap said mating second abutting surface within its corresponding mated first abutment surface to substantially restrain radial movement, and further wherein said first abutting surfaces and said second abutting surfaces are pulled into contact, with each other by engagement of the male and female protuberances upon said rotation of one pipe relative to the other pipe.

26. The connection according to claim 23 wherein a piping surface extends in at least one axial direction between the axially grouped protuberances and said at least one said first abutting surface.

28. The connection according to claim 23 wherein each of said two abutting surfaces are some axial distance from the protuberances, further wherein said protuberances are between said abutting surfaces.

29. The connection according to claim 23 wherein said at least one second abutting surface is shaped to urge said at least one first abutting surface toward a nearest radial confining surface when said abutting surfaces experience an axially directed loading force.

32. The connection according to claim 23 wherein said plurality of arrays comprises an odd number of said arrays.

33. The connection according to claim 32 wherein an odd number of arrays provides a positive determination of a circumferential starting point for engaging the respective protuberances of the male and female ends.

34. The connection according to claim 23 wherein said connection is used for connecting pipe, which is being driven into the earth.

35. The connection according to claim 23 wherein the arrays of protuberances have at least some lead angle wherein mating of the protuberances, of the respective female and male ends, causes further longitudinal movement and resists free rotation in an direction opposite of the rotation direction for engagement.

36. The connection according to claim 23 wherein the arrays of protuberances have no lead

angle.

37. A method of making a connection comprising:

providing a first pipe having at least one female end, said female end having an inner surface, an internal annular shoulder, a nose face, and an outer surface;

providing a second pipe having a at least one male end, said male end having an inner surface said male end having an inner surface, an external annular shoulder, a nose face and an outer surface;

providing a first plurality of protuberances circumferentially and longitudinally spaced relative to each other about the inner surface of said female end;

providing a second plurality of protuberances circumferentially and longitudinally spaced relative to each other about the outer surface of said male end;

wherein said circumferential spacing forms a circumferential array comprising at least one longitudinal column on both the inner surface of said female end and the outer surface of said male end, and wherein said internal annular shoulder and said external annular shoulder being each shaped so as for each said internal shoulder and each said external shoulder to receive a mating nose face, wherein at least one said internal shoulder and/or external shoulder and its corresponding mating nose face are shaped to substantially entrap said nose face within the shoulder to substantially restrain radial movement;

aligning said first pipe and said second pipe such that the female end of said first pipe is aligned to receive the male end of said second pipe;

further aligning said first pipe and said second pipe wherein said plurality of circumferential arrays are aligned such that said first plurality of protuberances, are accepted by a mating pipe end when the pipe ends move longitudinally relative to each other for forming a

connection;

providing longitudinal movement wherein said male end will enter and mate with said female end;

continuing longitudinal movement until said male end is fully engaged in said female end;

rotating one pipe with respect to the other pipe wherein said rotation causes the protuberances of the male and female ends to move circumferentially with respect to each other and wherein the male and female ends engage each other; and

pulling the corresponding internal shoulder and its mating nose face and the external shoulder and its mating nose face into contact, with each other by engagement of the male and female protuberances upon said rotation of one pipe relative to the other pipe, wherein said internal shoulder and its corresponding mating nose face and said external shoulder and its corresponding mating nose face are distinct from surfaces of said protuberances, and wherein the contact of the shoulders and the mating nose faces causes compressive loads on the male end and the female end to be borne substantially by the shoulders.

38. The method of Claim 37, wherein the rotation of one pipe segment with respect to the other pipe segment is less than 20 degrees.

39. The method of Claim 37, wherein said connection is used for connecting pipe, which is being driven into the earth.

51. A threaded connection for end-to-end assembly of pipe sections to pipe strings, the connection comprising:

a first pipe end with a socket and a second pipe end with a pin to mate with said socket;

a plurality of first cam patches of first arcuate cams extending peripherally about the inner surface of said socket, said first cam patches separated by surfaces defining peripherally extending first slots;

a plurality of second cam patches of second arcuate cams extending peripherally about the outer surface of said pin, said second cam patches separated by surfaces defining peripherally extending second slots;

all said slots and patches arranged such that said patches are accepted by said slots when said pin end is axially inserted into said socket;

all said arcuate cams axially distributed some distance and comprising lands and grooves peripherally extending some distance in a selected helical direction, said grooves configured to accept said lands when rotation of said box relative to said pin causes said lands to move peripherally along said grooves; and

a first abutting surface on said first pipe arranged to oppose and mate with a second abutting surface on said second pipe and a first abutting surface on said second pipe arranged to oppose and mate with a second abutting surface on said first pipe, with a selected axial force, when said patches on said pin are approximately juxtaposed with said patches on said socket,

wherein said abutting surfaces are pulled into contact, with each other by engagement of the pin and socket patches upon said rotation of said box relative to said pin, and wherein said abutting surfaces are distinct from surfaces of the pin and socket patches and wherein at least one of said first abutting surfaces and its corresponding second abutting surface are shaped to substantially entrap said mating second abutting surface within its corresponding mated first abutment surface to substantially restrain radial movement.

54. The connection according to claim 51 wherein a tubular surface extends in at least one

axial direction between said cam patches and the first abutting surface.

56. The connection according to claim 55 wherein each of said two abutting surfaces are some axial distance from said patches, said patches between said abutting surfaces.

57. The connection according to claim 51 wherein at least some of said lands and their related said grooves are shaped to radially capture said lands within its related said grooves to prevent radial expansion of said socket relative to said pin.

58. The connection according to claim 51 wherein said at least one second abutting surface is shaped to urge said at least one first abutting surface toward a nearest radial confining surface when said abutting surfaces experience an axially directed loading force.

60. The connection according to claim 51 wherein at least one of said arcuate cams embodies at least one interference dimension that causes one surface to displace a mating surface, by material strain, to increase the torque required to rotate said first pipe relative to said second pipe.

61. The connection according to claim 51 wherein said cams are produced by at least one screw thread on said pin and a mating thread arrangement in said socket, wherein all said threads are interrupted by said slots to produce said arcuate cams.

63. The connection according to claim 51 wherein at least one conical surface on said first pipe end is engaged and force loaded by a mating surface on said second pipe end when the connection is made up.

64. The connection according to claim 63 wherein said at least one conical surface is shaped to accept at least one ring seal when the connection is made up.

65. The connection according to claim 51 wherein at least some of said lands and grooves have dimensional relationships such that an interference resists rotation of said socket relative to said pin, said interference requiring expansion of said socket for the connection to be completed.

66. The connection according to claim 51 wherein all arcuate cams are made from at least one thread, said thread to begin with a minimum axial dimension and expand uniformly and continually throughout the thread peripheral dimension, the grooves receiving said thread axially dimensioned to fully engage both flanks of the thread when connection make-up is complete.

69. A threaded connection for end-to-end assembly of pipe sections, the connection comprising:

first and second pipe ends to be threadedly joined, said first pipe having female configuration defined as a box, the second pipe having mating male configurations defined as a pin;

the box having, in series, a first abutment surface defining one end of the first pipe, a first unthreaded length, a first threaded length, a second unthreaded length, and a second abutment surface to terminate the box configuration on the first pipe;

the pin having, in series, a third abutment surface to mate said second abutment surface, a third unthreaded length to be received in the second unthreaded length, a second threaded length to mate with the first threaded length, a fourth unthreaded length to be received in the first

unthreaded length, and a fourth abutment surface to mate with the first abutment surface and terminate the pin configuration, wherein at least one of the mating third and second abutment surfaces and/or the mating fourth and first abutment surfaces are shaped so as to substantially entrap the second or fourth abutment within its correspondingly mating first or third abutment;

the first and second threaded lengths, each, comprising at least two patches of incomplete threads on the pin and similar and mating patches of incomplete threads in the box, all said patches formed by peripheral thread cut-outs producing surfaces to define slots which will accept the patches when the box receives the pin in axial relative movement, the patches on the pin arranged to engage the patches in the box when the pin is rotated relative to the box, at least one of said incomplete thread embodies at least one interference dimension that causes the incomplete thread to displace a mating incomplete thread surface when the patches on the pin engage the patches on the box, said abutting surfaces to be axially force loaded, when said at least one mating incomplete thread surface is displaced, a preselected amount when the patches on the pin are approximately juxtaposed with the patches on the box, wherein the abutment surfaces are distinct from surfaces of said patches of incomplete threads.

72. The threaded connection of claim 69 further comprising a first and second conical surface, wherein the first and the second conical surfaces open toward the end of the pin.

73. The threaded connection of claim 69 wherein said thread and its receiving groove are tapered such that, when the patches are juxtaposed, each uninterrupted length of thread fully fills at least the axial dimension of the receiving thread groove.

9. Evidence Appendix

None.

10. Related Proceedings Appendix

None.